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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,190	10/28/2003	Masahiko Tsukuda	AOY-3970US	4306

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EXAMINER	
BIBBINS, LATANYA	

ART UNIT	PAPER NUMBER
2633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,190	TSUKUDA ET AL.	
	Examiner	Art Unit	
	LaTanya Bibbins	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/21/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Nonstatutory Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 7, 9, and 10 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 3 of U.S. Patent No. 7,053, 394 B2 (herein referred to as '394). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Instant claim 7 recites a recording apparatus for performing recording on a master of an information recording medium, in which the master has a recording material, comprising: a rotational mechanism for holding and rotating the master; a displacement detection device for detecting a displacement of a surface of the master, which includes a plurality of irradiation detection systems; wherein each of the

irradiation detection systems includes a light source for emitting a light beam to the surface of the master, a position detector for detecting a direction of the light beam reflected on the surface of the master and a normalizing mechanism for normalizing an output signal of the position detector by a luminous intensity received by the position detector; wherein the light beams from the light sources of the irradiation detection systems substantially confront each other so as to be incident upon a substantially identical position on the surface of the master; wherein a sum or a difference of the output signals of the position detectors is calculated by using signals outputted from the normalizing mechanisms of the irradiation detection systems; and an irradiation means for irradiating a recording beam to the surface of the master at a focal position of the recording beam on the basis of an information signal to be recorded such that the focal position of the recording beam is changed in accordance with the displacement detected by the displacement detection device.

Instant claim 9 recites the recording apparatus as claimed in instant claim 7, wherein the recording beam is an electron beam.

Instant claim 10 recites the recording apparatus as claimed in instant claim 7, wherein a pattern for adjusting the focal position of the recording beam is formed on the surface of the master or at a height substantially identical with the surface of the master.

Claim 1 of '394 also claims *a* recording device of a master disk for an information recording medium, comprising: a rotating mechanism for holding and rotating a substrate disk with a recording material layer; a displacement detecting device for detecting a displacement of a surface of the substrate disk and an irradiation device for

irradiating the substrate disk with an electron beam according to information to be recorded, the recording device performing a control so that the recording beam is focused on the surface of the substrate disk based on a displacement amount detected by the displacement detecting device, wherein the displacement detecting device comprises: plural light sources for emitting the light beams to the surface of the substrate disk; position detectors for respectively detecting positions at which the light beams reflected by the surface of the substrate disk are incident upon predetermined detection planes and outputting them as position detection signals; wherein the respective light sources are arranged so that the light beams are obliquely incident upon the same position on the surface of the substrate disk from upper side positions opposed to each other, and the signal processing part obtains a difference between or a sum of the respective position detection signals.

Claim 3 of '394 also claims a recording device of a master disk for an information recording medium, comprising: a rotating mechanism for holding and rotating a substrate disk with a recording material layer; a displacement detecting device for detecting a displacement of a surface of the substrate disk, and an irradiation device for irradiating the substrate disk with an electron beam according to information to be recorded, the recording device performing a control so that the recording beam is focused on the surface of the substrate disk based on a displacement amount detected by the displacement detecting device, wherein the displacement detecting device comprises: plural light sources for emitting the light beams to the surface of the substrate disk; position detectors for respectively detecting positions at which the light

beams reflected by the surface of the substrate disk are incident upon predetermined detection planes and outputting them as position detection signals; wherein the respective light sources are arranged so that the light beams are obliquely incident upon the same position on the surface of the substrate disk from upper side positions opposed to each other, and the signal processing part obtains a difference between or a sum of the respective position detection signals.

Claims 1 and 3 of '394 do not comprise a normalizing mechanism for normalizing an output signal of the position detector by a luminous intensity received by the position detector. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a normalizing mechanism as part of the invention. One of ordinary skill in the art, at the time of the invention, would have been motivated to include the normalizing mechanism in order to improve the accuracy.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by McCord et al. (US Patent Number 6,597,006 B1).

Regarding claim 1, McCord discloses a displacement detection method (column 6 lines 7 and 8) in which by reflecting a light beam on a surface of an object to be measured, a displacement of the surface of the object is detected from a change of the reflected light beam due to a change of the displacement of the surface of the object, comprising the steps of: causing light beams to be incident upon a substantially identical position on the surface of the object from at least two light sources confronting each other substantially (column 6 lines 7-13); detecting by position detection means directional changes of the light beams reflected on the surface of the object, respectively (column 6 lines 25-28); normalizing output signals of the position detection means by luminous intensities received by the position detection means, respectively (column 15 lines 17-20, column 18 lines 22-25); and calculating a sum or a difference of the normalized output signals of the position detection means (column 6 lines 37-40).

The means plus function language recited in claim 1 indicates that applicant intends to invoke 35 U.S.C. 112 paragraph six. Where means plus function language is used, claim limitations are interpreted to read on only the corresponding structure disclosed in the specification and equivalents thereof. The instant specification discloses the structure used for the "position detection means" as a photodiode or a position sensitive detector (PSD).

Regarding claim 4, McCord discloses a displacement detection device (see Figure 2a) for detecting a displacement of a surface of an object to be measured, comprising a plurality of irradiation detection systems (column 12 lines 22-27) each of which includes a light source for emitting a light beam to the surface of the object

(Figure 2a, element 32), a position detector for detecting a direction of the light beam reflected on the surface of the object (Figure 2a elements 22a and 22b, column 5 lines 35-40) and a normalizing mechanism for normalizing an output signal of the position detector by a luminous intensity received by the position detector (column 15 lines 17-20, column 18 lines 22-25); wherein the light beams from the light sources of the irradiation detection systems substantially confront each other so as to be incident upon a substantially identical position on the surface of the object (column 4 lines 55-61); wherein a sum or a difference of the output signals of the position detectors is calculated by using signals outputted from the normalizing mechanisms of the irradiation detection systems (Figure 2a element 26, column 5 lines 50-53).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCord et al (US Patent Number 6,597,006 B1) in view of Hercher (US Patent Number 5,982,494).

Regarding claim 2, McCord discloses an optical path plane is formed by the light beam incident upon the surface of the object and the reflected light beam (see Figure 2a) and a position detector having a light receiving face divided into two light receiving

portions (see Figure 1 element 22, column 8 lines 45-47) that acts as each of the position detection means. McCord does not teach a position detector with a dividing line in a direction substantially perpendicular to a tangent between the optical path plane and the light receiving face; wherein by causing the reflected light beam to be incident upon the dividing line of the light receiving face, the position detector detects a position of the reflected light beam from a difference of signals detected at the two light receiving portions of the light receiving face, respectively such that the difference of the signals is normalized by a sum of the signals.

However, Hercher teaches a position detector with a dividing line in a direction substantially perpendicular to a tangent between the optical path plane and the light receiving face (column 2 lines 46-52); wherein by causing the reflected light beam to be incident upon the dividing line of the light receiving face (column 5 lines 12 and 13), the position detector detects a position of the reflected light beam from a difference of signals detected at the two light receiving portions of the light receiving face, respectively such that the difference of the signals is normalized by a sum of the signals (column 5 lines 14-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of McCord and Hercher. One would have been motivated to combine the position detector of Hercher with the displacement detection method of McCord in order to normalize the signals and improve the accuracy (see column 5, lines 14-28 of Hercher).

Regarding claim 5, McCord discloses an optical path plane is formed by the light beam incident upon the surface of the object and the reflected light beam (see Figure 2a) and a luminous intensity detection element having a light receiving face divided into two light receiving portions (see Figure 1 element 22, column 8 lines 45-47) that acts as the position detector McCord does not teach a position detector with a dividing line in a direction substantially perpendicular to a tangent between the optical path plane and the light receiving face; wherein by causing the reflected light beam to be incident upon the dividing line of the light receiving face, the luminous intensity detection element detects a position of the reflected light beam from a difference of signals detected at the two light receiving portions of the light receiving face, respectively; wherein the normalizing mechanism normalizes the difference of the signals by a sum of the signals.

However, Hercher teaches a position detector with a dividing line in a direction substantially perpendicular to a tangent between the optical path plane and the light receiving face (column 2 lines 46-52); wherein by causing the reflected light beam to be incident upon the dividing line of the light receiving face (column 5 lines 12 and 13), the luminous intensity detection element detects a position of the reflected light beam from a difference of signals detected at the two light receiving portions of the light receiving face, respectively; wherein the normalizing mechanism normalizes the difference of the signals by a sum of the signals (column 5 lines 14-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of McCord and Hercher. One would have been motivated to combine the position detector of Hercher with the displacement

detection method of McCord in order to normalize the signals and improve the accuracy (see column 5, lines 14-28 of Hercher).

Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCord and Hercher, as applied to claims 2 and 5 above, and further in view of Ogawa (US Patent 5,666,574).

Regarding claims 3 and 6, McCord and Hercher disclose a displacement detection method and associated device but do not teach that the two light receiving portions of the light receiving face have a substantially identical detection sensitivity.

However, Ogawa teaches a photo detection method and apparatus the two light receiving portions (Figure 1 elements Pda and Pdb) of the light receiving face have a substantially identical detection sensitivity (see column 2, lines 55-59).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the displacement detection method and apparatus taught by McCord and Hercher with the photo detection method and apparatus of Ogawa where the photo detectors are adjusted to have the same photo-sensitivities. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to create reliable photo-detection that is independent of the intensity of external light (Ogawa column2 lines 31 and 32).

Claims 7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wada (US Patent Number 6,586,753 B2) in view of McCord (US Patent Number 6,586753 B2).

Regarding claim 7, Wada teaches a recording apparatus for performing recording on a master of an information recording medium (Figure 2), in which the master has a recording material (column 4 lines 1-8), comprising: a rotational mechanism for holding and rotating the master (Figure 2 elements 13 and 14, column 4 lines 22 and 23); a displacement detection device for detecting a displacement of a surface of the master (Figure 3 element 39, column 5 lines 29-31), an irradiation means for irradiating a recording beam to the surface of the master (Figure 2 element 20) at a focal position of the recording beam on the basis of an information signal to be recorded such that the focal position of the recording beam is changed in accordance with the displacement detected by the displacement detection device (column 5 lines 35-40). Wada does not teach a plurality of irradiation detection systems included in the displacement detection device.

Regarding claim 9, Wada teaches an electron recording beam (column 4 lines 17-20).

Regarding claim 10, Wada teaches a pattern for adjusting the focal position of the recording beam (column 6 lines 9-15) is formed at a height substantially identical with the surface of the master (Figure 2 elements 50 and 12, column 7 lines 5-7).

McCord teaches a displacement detection device (see Figure 2a) for detecting a displacement of a surface of the master, which includes a plurality of irradiation detection systems (column 12 lines 22-27); wherein each of the irradiation detection systems includes a light source for emitting a light beam to the surface of the master (Figure 2a, element 32), a position detector for detecting a direction of the light beam

reflected on the surface of the master (Figure 2a elements 22a and 22b, column 5 lines 35-40) and a normalizing mechanism for normalizing an output signal of the position detector by a luminous intensity received by the position detector (column 18 lines 22-25); wherein the light beams from the light sources of the irradiation detection systems substantially confront each other so as to be incident upon a substantially identical position on the surface of the master (column 4 lines 55-61); wherein a sum or a difference of the output signals of the position detectors is calculated by using signals outputted from the normalizing mechanisms of the irradiation detection systems(Figure 2a element 26, column 5 lines 50-53).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wada to incorporate the height sensor sub-system as taught by McCord. One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings in order to reduce error in the determination of height and to position a specimen within a system with high precision (see McCord column 4 lines 20-30).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wada and McCord, as applied to claims 7, 9, and 10 above, and further in view of Matsuoka (JP 06-003115). Rejections in view of Matsuoka are based on an oral translation provided by the USPTO STIC Translation Branch. Therefore loose citations, if any, are provided.

Regarding claim 8, *(see the teachings of Wada and McCord above), neither* teaches a step of a predetermined depth is provided on the surface of the master or at a

height substantially identical with the surface of the master; wherein by detecting a sensitivity of the displacement detection device from a signal outputted upon scanning of the step by the displacement detection device, a signal for the irradiation means is corrected.

However, Matsuoka teaches a calibration method of height ,measuring device with a step of a predetermined depth (Figure 3 element 304) provided on the surface of the master or at a height substantially identical with the surface of the master (Figures 3 and 5); wherein by detecting a sensitivity of the displacement detection device from a signal outputted upon scanning of the step by the displacement detection device (see the abstract and paragraphs 6 and 7). Matsuoka teaches that by scanning a stepped portion of a known height with a light beam, calibration of the height measuring device is performed based on a correspondence between a height obtained by the height measuring device and the difference in height at the stepped portion (see column 1, paragraph 6).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the recording apparatus of Wada and McCord with the use a step of a predetermined depth for calibration as taught by Matsuoka. One of ordinary skill in the art would have been motivated to combine the teachings of Wada and McCord with the teachings of Matsuoka in order to facilitate the execution of highly precise measurements by calibrating the measuring device prior to determining the displacement.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaTanya Bibbins whose telephone number is (571) 270-1125. The examiner can normally be reached on Monday through Friday 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shanon Foley can be reached on 571 272-0898. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LaTanya Bibbins
Patent Examiner

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